

CLAIMS

- [1] A switching power supply apparatus, including:
- a switching device for performing an on/off operation;
 - a control circuit for controlling on/off of the switching device;
 - a coil, a level of a current flowing therethrough being controlled by the switching device;
 - a capacitor that is connected to the coil and that performs rectification together with the coil; and
 - an oscillator for outputting to the control circuit an oscillating signal at intervals of a fixed time period for turning the switching device on,
- wherein the switching power supply apparatus outputs an output voltage from a node at which the capacitor and the coil are connected together,
- the switching power supply apparatus comprising:
- a current detection portion for detecting a current value flowing through the coil, converting the detected current value into a voltage value, and then outputting the voltage value thus obtained as a current detection voltage;
 - a voltage source for adding an offset voltage to the current detection voltage from the current detection portion; and
 - a comparator for comparing the current detection voltage to which the offset voltage is added by the voltage source with a voltage commensurate with a difference between a voltage commensurate with the output voltage and a reference voltage,
- wherein, if the comparator finds a magnitude of the current detection voltage to which the offset voltage is added to be greater than the voltage commensurate with a difference between the voltage commensurate with the output voltage and the

reference voltage, the oscillating signal from the oscillator is masked, and the switching device is turned off.

- [2] The switching power supply apparatus of claim 1,
wherein a slope compensation waveform is superimposed on the current detection voltage to be fed to the comparator.
- [3] The switching power supply apparatus of claim 2,
wherein the slope compensation waveform has a same time period as the oscillating signal from the oscillator.
- [4] The switching power supply apparatus of claim 1,
wherein the offset voltage fed from the voltage source varies depending on a result of comparison preformed by the comparator.
- [5] The switching power supply apparatus of claim 1, further comprising:
a differential amplifier for receiving a voltage commensurate with the output voltage
and the reference voltage,
wherein a voltage commensurate with a difference between the voltage commensurate with the output voltage and the reference voltage, the voltage being outputted from the differential amplifier, is fed to the comparator.
- [6] The switching power supply apparatus of claim 5, further comprising:
a level shifter for converting a level of the voltage outputted from the differential

amplifier.

[7] The switching power supply apparatus of claim 1,
wherein the control circuit includes

 a flip-flop circuit having a set terminal to which the oscillating signal from the oscillator is inputted and a reset terminal to which an output from the comparator is inputted, and

 a driver for controlling on/off of the switching device depending on an output from the flip-flop circuit.

[8] The switching power supply apparatus of claim 1,
wherein the current detection portion includes

 a detector transistor having a first electrode connected to an output side of the switching device and a control electrode to which a signal to be fed from the control circuit to the switching device is inputted, and

 a resistance that is connected, at one end thereof, to a second electrode of the detector transistor, and that receives a direct-current voltage at another end thereof,
wherein a voltage appearing at the second electrode of the detector transistor serves as the current detection voltage.

[9] A mobile device comprising the switching power supply apparatus of one of claims 1 to 8.